Effect of foliar spray of different sources and concentrations of silicon on some morphological and physiological characteristics of Rose cv. Beverly Watson

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Abstract

Due to the beneficial effects of silicon (Si) on ornamental plants, the aim of this study was to investigate the effect of different sources and concentrations of Si on some characteristics of Rose (*Rosa hybrida* cv. Beverly Watson). This research was conducted in 2015 in one of the greenhouses of Parks and Landscape Organization of Urmia and in Research Laboratories of Horticultural Science Department, Faculty of Agriculture, Urmia University. A factorial experiment, based on completely randomized design, was conducted with 2 factors of Si source (calcium silicate, potassium silicate and sodium silicate) and Si concentration (0, 50, 100, 150 and 200 mg/L) with 3 replications. Treatments were applied weekly via foliar spray for 10 weeks. Results showed that Si treatment increased leaf number and thickness, leaf fresh and dry weight, leaf chlorophyll content, soluble sugar content and protein content. Because of these beneficial effects of Si on leaf number and chlorophyll content, it can improve the photosynthesis. Potassium silicate spray caused the highest content of chlorophyll *a* and the highest content of chlorophyll b and carotenoid was resulted from the application of calcium silicate. The highest content of fresh and dry weight of leaf, chlorophyll *a*, *b* and total chlorophyll and carotenoid was achieved in 200 mg/L silicate application. Due to the positive effects of Si on growth characteristics and photosynthetic pigments, these materials can be used to improve the rose quality.

Keywords: Foliar spray, Rose, Potassium silicate, Sodium silicate, Calcium silicate.

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